

**APPLICATION FOR UNITED STATES LETTERS PATENT**

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**TITLE:** ELECTRONIC COMMERCE SYSTEM AND OPERATING METHOD  
THEREOF

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# ELECTRONIC COMMERCE SYSTEM AND OPERATING METHOD THEREOF

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

[01] The present invention relates to a system and method for electronic commerce, and more particularly to a system and method for on-line product trade using electronic commerce.

### 2. Background of the Related Art

[02] The recent rapid progress in information telecommunication between computers has improved business efficiency and has changed the way of life. For instance, electronic commerce (e-commerce), which provides for on-line shopping over a computer network, has become increasingly popular.

[03] The popularity of such on-line e-commerce, however, has been somewhat subdued, especially for individual customers, due to the failure to provide direct dealing between a purchaser and a provider. On the contrary, usage of Business to Business (B-to-B) transactions has tended to increase by making a dealing through a reciprocal contract between a sales distributor and a purchaser.

[04] The current B-to-B systems and methods have various problems, such as, lack of convenient and fast contracting, various expenses, transactions considering the location and distribution network of a business company, credit management for the respective dealing companies, and the like.

[05] For example, when issuing an instruction for placing and receiving an order between the product purchaser and the sales distributor, many factors should be considered. These factors include the amount of surplus stock, the storage capacity of a warehouse for warehousing and delivery, schedule for the warehousing and delivery, the availability of manufacturing the corresponding product due on a corresponding shipping date, and so on. Thus, personnel of the sales distributor and the buyer companies should carry out additional on-line services for reconciling their opinions before placing an order. Therefore, the related art e-commerce method for placing and receiving an order is not convenient.

[06] Additionally, a product purchasing company in a typical B-to-B transaction has a burden in asking for delivery of a product after having paid the expense for buying the corresponding product. This requires an additional preceding off-line agreement between the reciprocal companies. A letter of credit through a banking corporation enables the trade to be quickly processed. However, a new letter of credit must be opened for every transaction. Moreover, for each letter of credit, a conference between the reciprocal companies and the verification of the corresponding banking corporation are required. Thus, the method using the letter of credit fails to be effective. Hence, the related art e-commerce system cannot easily process the various transaction expenses.

[07] Next, considering the competition between at least two retailers, a wholesaler generally carries out the sale of different goods (or goods having different performances). Yet, a sale through e-commerce never considers such factors, thereby bringing about the chaos in the sub-distribution network.

[08] Moreover, although credibility between the respective companies is required for carrying out the e-commerce between the respective companies, fair evaluation for the dealing company fails to be provided due to the database attained by carrying out credit measurement of the corresponding dealing company through an off-line verification. Hence, the related art e-commerce system cannot perform fair evaluation for the corresponding dealing company so as to manage the credits of the respective dealing companies.

### SUMMARY OF THE INVENTION

[09] Accordingly, it is an object of the present invention to provide an electronic commerce system and operating method thereof that substantially obviates one or more problems due to limitations and disadvantages of the related art.

[010] It is a further object of the present invention to provide a system and method for performing e-commerce that considers the locations of the respective dealing companies and a distribution network thereof.

[011] It is another object of the present invention to provide an e-commerce system and method that process various e-commerce expenses quickly and efficiently.

[012] It is a further object of the present invention to provide a convenient and efficient e-commerce process for placing and receiving orders between the dealing companies.

[013] To achieve at least these objects in whole or in parts, there is provided an e-commerce system including a database server configured to store information relating to respective dealing companies, information of orders placed by the respective dealing

[014] To further achieve at least the above objects in whole or in parts, there is provided an e-commerce system having a database server configured to store information relating to respective dealing companies, information about respective sales products, information about order-available products for the respective dealing companies, and the like, and a web server, coupled to the database server, operating a web site for an on-line sale of the respective products, and selecting the order-available products for the respective dealing companies so as to display items of the selected products only on an interface screen.

[015] To further achieve at least the above objects in whole or in parts, there is provided an e-commerce system having a database server configured to store information

about respective dealing companies and credit information of the respective dealing companies, credit limit amount information of the respective dealing companies wherein the credit limit amount information is established by considering the credit information, and information of respective sales products, and information of an order control for each situation, and a web server linked to the database server and operating a web site to receive an on-line order for an on-line sale of each of the products within a credit limit amount of each of the dealing companies.

[016] To further achieve at least the above objects in whole or in parts, there is provided an e-commerce system having a database server configured to store information concerning respective dealing companies and credit information of the respective dealing companies, order restriction information of respective statuses including amounts in stock by the respective models of sales products, sale or sale-suspension of the respective models of the sales products, out-of-production or production of the respective models of the sales products, and the like, and a web server coupled to the database server, and configured to operate a web site to receive an on-line order for a sale of each of the products, acquiring recent information about the respective products and dealing companies continuously so as to register the acquired information to the database server, and carrying out, when an order for a product purchase is generated from each of the dealing companies, an order control for the order-generating dealing company.

[017] To further achieve at least the above objects in whole or in parts, there is provided an e-commerce system having a database server for storing information relating to respective dealing companies, information about respective sales products, information

about respective order errors, item information of respective confirmed orders, and the like, a web server for operating a web site to receive an on-line order for the sale of the respective products from the respective dealing companies, an error processing server for searching an error through order information of the respective products received through the web site operated by the web server, and an order confirmation server for carrying out a confirmation of the order which has no error or of which error has been cured.

[018] To further achieve at least the above objects in whole or in parts, there is provided a method of operating an e-commerce system, including a first step of checking each order restriction information for a corresponding dealing company from a database server when an on-line connection is made from respective dealing companies; a second step of making a classification into order-available products and order-unavailable products on the basis of the checked order restriction information; a third step of displaying a list of the order-available products in the classified products and information about the corresponding products on a web page; a fourth step of, when receiving a trade order for a specific product in the respective displayed order-available products, yielding an expense of the corresponding ordered product on the basis of the received order items so as to examine whether the yielded expense exceeds a credit limit amount given randomly to the corresponding dealing company, as well as checking (i) whether the received purchase order items belong to order restriction items of respective situations set up previously in the database server (ii) and whether the received purchase order items belong to order error items set up previously in the database; and a fifth step of carrying out an order confirmation

on the corresponding purchase order items if there is no abnormality in the order items through the respective procedures in the fourth step.

[019] To further achieve at least the above objects in whole or in parts, there is provided a method of operating an e-commerce system, including a first step of checking each order restriction information for a corresponding dealing company from a database server when an on-line connection is made from respective dealing companies; a second step of making a classification into order-available products and order-unavailable products on the basis of the checked order restriction information; and a third step of displaying a list of the order-available products in the classified products and information about the corresponding products on a web page.

[020] To further achieve at least the above objects in whole or in parts, there is provided a method of operating an e-commerce system, including a first step of, when receiving a trade order for a specific product in respective products sold through a web site for an e-commerce from respective dealing companies, yielding a sales expense of the corresponding ordered product on the basis of received order items; a second step of determining whether the yielded expense exceeds a credit limit amount given randomly to the corresponding dealing company; a third step of, if the yielded expense exceeds the given credit limit amount, reporting that the yielded expense exceeds the credit limit amount so as to request a readjustment of the order, or, if the yielded expense fails to exceed the given credit limit amount, deducting the expense from the corresponding credit limit amount and then readjusting information of the balanced credit limit amount into a remaining credit amount of the corresponding dealing company.





settled; and a fourth step of confirming an order sheet for the normal order items or error-settled order items.

[023] Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objects and advantages of the invention may be realized and attained as particularly pointed out in the appended claims.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

[024] The invention will be described in detail with reference to the following drawings in which like reference numerals refer to like elements wherein:

[025] Figure 1 illustrates a structural diagram for an e-commerce system according to a preferred embodiment of the present invention;

[026] Figure 2 is a flowchart illustrating a process for registering a credit limit amount according to the preferred embodiment;

[027] Figure 3 is a flowchart illustrating a process for registering a product availability for ordering by each dealing company according to the preferred embodiment;

[028] Figure 4 is a flowchart illustrating a method of an e-commerce system according to a preferred embodiment of the present invention;

[029] Figure 5 is a flowchart illustrating an operation for a divisional shipment of the process in Figure 4;

[030] Figure 6 is a flowchart illustrating an operation for a shipment of the process in Figure 4;

[031] Figure 7 is a flowchart illustrating an operational process when requested for changing a credit limit during the process in Figure 4;

[032] Figure 8 is a diagram illustrating an e-commerce system according to a second embodiment of the present invention;

[033] Figure 9 is a diagram illustrating an operational process in the second embodiment of the present invention;

[034] Figure 10 is a diagram illustrating an e-commerce system according to a third embodiment of the present invention;

[035] Figure 11 to Figure 14 illustrate operational processes according to the third embodiment of the present invention;

[036] Figure 15 is a diagram illustrating an e-commerce system according to a fourth embodiment of the present invention; and

[037] Figure 16 and Figure 17 illustrate operational processes according to the fourth embodiment of the present invention.

### **DETAILED DESCRIPTION OF THE INVENTION**

[038] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

[039] The preferred embodiment of the present invention is characterized in that e-commerce is preferably performed by considering the locations of the respective

dealing companies and corresponding distribution networks, providing for fast and smooth handling of various expenses related to e-commerce processing, and conveniently a process for placing and receiving orders between the dealing companies is carried out conveniently.

[040] Figure 1 illustrates a structural diagram for an e-commerce system according to a preferred embodiment of the present invention.

[041] Referring to Figure 1, an e-commerce system according to the present invention preferably includes a database server 10 for storing various kinds of information, a web server 20 for operating an on-line web site for e-commerce, and an information acquisition server 30 for acquiring various kinds of information. It preferably further includes an order control set-up server 40 for establishing the items of an account for an order limit of each dealing company using the acquired information, an order control server 50 for controlling each purchasing order, and an order confirmation server 60 for carrying out a confirmation of a product order received on-line from the respective dealing companies.

[042] The database server 10 is preferably configured to store information relating to the respective dealing companies, information regarding orders placed by the respective dealing companies, and information about the respective sales products. The database server 10 may further store information regarding the items of an order for the order control, as well as the respective ordering errors. Additionally, credit information of the respective dealing companies and information regarding credit limit amounts of the respective dealing companies, which are set up in accordance with the credit information, are preferably stored in the database server 10. The database server 10 may also store stock

information of each model of the sales products, information concerning whether to stop selling the respective models of the sales products, information about ceased models of the respective sales products, and accounting information of the items for each confirmed order. It should be understood that other information items could be stored in the database, and that the above description is not intended to limit that which can be stored.

[043] The web server 20 is coupled to the database server 10, and preferably operates a web site to receive on-line orders from the respective dealing companies for an on-line sale of the respective products. The web server 20 also controls which of the product items, which are selected to be available for order from the respective dealing companies are to be displayed on an interface screen (web page).

[044] The information acquisition server 30 preferably acquires information about the respective dealing companies and registers the acquired information in the database server 10. The data acquisition is preferably performed on a continuous basis. The information acquisition server 30 is preferably coupled to the database server 10.

[045] The order control server 50 preferably gathers information about the items ordered through the web server 20. It also gathers information about the respective order errors and the order control items stored in the database server 10, so as to determine whether the errors are accurate. The order control server 50 then selectively carries out the order control in accordance with this determination.

[046] The order confirmation server 60 carries out a scheduled order processing so that a product shipment amounting to at least the partial quantity of the total order quantity of the order-confirmed products is accomplished every set-up date. The order

confirmation server 60 further comprises a divisional order processing server 61 for registering the completed items of the scheduled orders in the temporary order information storage unit 11. The allocation in the temporary order storage unit 11 is preferably performed randomly.

[047] Thus, the temporary order storage unit 11 proposes a predetermined information storing area randomly allocated to the database server 10. The temporary order storage unit 11, which is not limited to such a proposal, may be constructed with an additional server so as to temporarily register the order that is processed divisionally by the respective schedules.

[048] Moreover, the e-commerce system according to the preferred embodiment further includes a shipment confirmation server 80 linked to each warehouse network 70 so as to confirm the shipment of the corresponding order quantity of the respective orders. The shipment confirmation server 80 is preferably configured to be controlled in connection with the web server 20 and database server 10, respectively, as well as the warehouse network 70.

[049] The warehouse network 70 is preferably a network built for every corresponding warehouse to manage the respective off-line warehouses in which the in stock products are stored.

[050] Next, the e-commerce system preferably further includes a credit information management server 91 for managing the credit information of the respective dealing companies, and a grade allotment server 92 for establishing credit limit amounts for each of the respective dealing companies.

[051] The credit information management server 91 preferably produces a purchase expense of a specific dealing company for which an order is received through the web site. It then determines whether to approve the corresponding order by comparing the order expense and the credit limit amount given to the corresponding dealing company. Finally, it performs item management when a variation of the credit limit amount of each of the dealing companies occurs.

[052] The grade allotment server 92 allots a grade as an allotting reference of the credit limit amount of each of the dealing companies on the basis of the information acquired from the information acquisition server 30 relating to the dealing companies.

[053] An operating method of the above-constructed e-commerce system according to a preferred embodiment of the present invention is explained in the following description.

[054] Figure 2 illustrates a process for registering a credit limit amount. The information acquisition server 30 preferably keeps acquiring and verifying the information about the credit grade variations of the respective dealing companies and the information about the distribution channel and credit grade of a company asking for a new service subscription. This information is thus registered in the database server 10.

[055] The state linked to a web site evaluating the credit grades of the respective companies on-line allows for the acquisition of the credit information about the respective dealing companies. Alternatively, the information acquisition can be accomplished by receiving the credit information, which is obtained off-line, about the respective dealing companies.

[056] When the credit grade variation of each of the respective dealing companies is acquired, the credit limit amount can be readjusted, by increasing or decreasing in accordance with the corresponding credit grade. The adjusted value is then stored in the corresponding database server 10.

[057] While the above process is carried out, the grade allotment server 92 preferably confirms the credit grades of the respective dealing companies on the basis of the information regarding the respective dealing companies. This information is preferably acquired from the information acquisition server 30. The grade allotment server 92 then carries out the allotment of the credit limit amounts in accordance with the credit grades so as to continuously register the allotment in the database server 10.

[058] The allotting process of the credit limit amounts of the respective dealing companies is described in more detail as follows. First, membership registration is received from the dealing company.

[059] Then, the confirmation about the credit grade of the corresponding dealing company is accomplished by referring to the information regarding the corresponding subscribing dealing company. This information is preferably acquired when the corresponding dealing company carries out the membership registration through the on-line web site. Additionally, the confirmation process also uses information acquired by the information acquisition server. This information includes, for example, grade information attained by having the corresponding dealing company evaluated by a banking or credit corporation, general credit information regarding the dealing company evaluated by different companies, self-evaluated information by taking the previous transaction items as references,



and so forth. The credit limit amount previously established in accordance with the confirmed credit grade is thus given thereto.

[060] Alternatively, referring to Figure 3, the order control set-up server 40 selectively carries out the order limit establishment for the confirmed products of the respective dealing companies. This is done by verifying the information about the distribution channel variations of the respective dealing companies previously registered in the database server 10 and new product information designated to carry out a sale through the corresponding web site, a list of products available for orders of the respective dealing companies is then updated so as to register the updated list to the database server 10.

[061] The establishment for the order restriction products for each of the dealing companies is set up by taking the distribution channels or scales of the respective dealing companies as references. This is done by determining the sales distribution channel for the corresponding product when the registration of a specific product is confirmed and by being established such that the sale is limited to only the corresponding dealing company by verifying the respective dealing companies belonging to the determined distribution channel.

[062] Specifically, information such as a location of the corresponding dealing company and a distribution channel, for example, are requested as part of the information being asked to the respective dealing companies for the service registration to the corresponding web site. This information is used for the order restriction of the respective dealing companies. The registration as the order-available or order-unavailable

product for the respective sales products and new products is preferably carried out based on the acquired information.

[063] If the service registration of a new dealing company is made during the above step, the distribution channel of the corresponding dealing company is verified. Then, the order restriction information of the corresponding dealing company is registered by searching the sale-available product in this distribution channel only.

[064] The order restriction of products of each distribution channel is selectively established so that the product items for sale through an upper distribution channel are distinguished from those through a lower distribution channel.

[065] For instance, if the same products are sold at the same price to a first dealing company (such as a discount house, etc.) operating a wholesale business, and also to a second dealing company (such as an agency, etc.) operating a retail shop, the entire market order may collapse. Thus, the products sold to the wholesaler and the retailer are always discriminated so as to prevent the above-mentioned problems from occurring.

[066] The order restriction of the products through the respective distribution channels, however, does not have to be carried out in the above manner. Instead, considering the competition between the respective dealing companies (such as relation between agencies located in the specific area), it is preferable that the same products are not sold.

[067] Figure 4 illustrates a method of performing an e-commerce transaction according to the preferred embodiment. Referring to Figure 4, when a specific dealing company is linked to a web site operated by the e-commerce system, the acquisition and

registration of various kinds of information are continuously carried out by the above component parts. Additionally, a prescribed transaction is commenced when the web server 20 asks the linked dealing company to log-in (S101). The log-in procedure is used to verify the corresponding dealing company.

[068] The web server 20 next acquires information about order restriction products and order-available products for the corresponding dealing company. This information, which is preferably registered in the database server 10, is retrieved on the basis of the verified information. The web server 20 also selects the information relating to a list of the acquired order-available products and the corresponding products. The web server 20 then displays the selected list on the corresponding web page so as to prevent a user from attempting to purchase or otherwise access items that are not available. Thus, only displayed items are available.

[069] The order restriction products preferably further include products in short stock, no-more-sale products, ceased products, and the like, as well as order-restricted products associated with the distribution channel of the corresponding dealing company. By invoicing these items on the order-restriction category, errors due to unnecessary orders are prevented.

[070] The web server 20 also acquires information about the credit limit of the corresponding dealing company registered in the database server 10 (S102). This is done to the control display of the acquired information and the respective product information on the web page (S103).

[071] Thereafter, when a purchase order for at least one of the respective products displayed on the web page from a dealing company is carried out, the credit information management server 91 and order control server 50 determine whether errors have occurred in the corresponding order on the basis of the purchase order.

[072] To determine whether an error has occurred by the credit information management server, the credit limit of the company placing the corresponding order is verified in conjunction with the purchase expense of the ordered products (S104). The credit limit amount and the purchase expense are thus compared to each other (S105). If the product purchase order exceeds the credit limit given to the corresponding dealing company, it is determined that an error has occurred in the corresponding order.

[073] The respective order restriction items registered in the database server 10 are next verified (S106). The order control server 50 then checks for errors by determining whether the products ordered by the corresponding dealing company belong to the order restriction products (S107).

[074] In the above description, the order restriction items may include order restriction items of each of the product models, the order restriction items of each of the dealing companies, input errors according to the respective order items, and the like.

[075] The order restriction items of the product models include the items for which the sale of the corresponding model has ceased, which are no longer made, or for which a quantity of the purchase order fails to meet the minimum quantity of the order-available quantity (for instance, a product of which cost is less than a delivery cost is asked for sale, etc.).

[076] The order restriction items of the dealing companies preferably include items for which the corresponding dealing company has gone out of business due to dishonor, bankruptcy, and the like, for which the corresponding dealing company has committed illegal acts (such as fraud, illegal product distribution, etc.), or for which the corresponding dealing company is in arrears or has ordered an excessive quantity compared to the credit of the corresponding company. Order restriction items of the dealing company may also include items for which the corresponding company has a history of excessive returning-goods/retrocession and redemption, has a bad reputation in the same business circle, or has a reduced ability to make payments.

[077] Such processes are executed to prevent the problems and errors from later occurring due to information that has been omitted or changed between initiation and selection of the restricted items of the respective dealing companies.

[078] That is, because information could be omitted due to the time difference generated in the process of sharing (or updating) the information, the most preferable method includes continuously verifying the order restriction items of the respective products and dealing companies. The method further includes registering the verified order restriction items in the database server 10 on a real-time basis, and informing the verified order restriction items during the log-in procedure from a specific dealing company. Yet, the most preferable method is not limited to this.

[079] The items for the order errors generated from the above processes are transmitted to the corresponding dealing company through various on-line communication systems, such as e-mail (S108). The transmission preferably instructs the recipient to cure

the corresponding error. After the error is cured, the confirmation of the corresponding order is executed through the order confirmation server 60 (S109).

[080] In some instances, it may not be possible to confirm the received order upon receipt. For instance, the ordered product may not exist on the sales list, a price of the ordered product may differ from the previously set-up minimum price, or a quantity of the available product in stock may be less than that which was ordered, for example.

[081] Thus, when a quantity of the available products in stock is less than the quantity ordered, it is preferable that a divisional shipment be carried out with the consent of the dealing company that placed the corresponding order.

[082] Figure 5 illustrates an operation for a divisional shipment of the process shown in Figure 4.

[083] Referring to Figure 5, a method for divisional shipment first checks order items in a process of carrying out a confirmation on an order (S111). Next, the amount of available products in stock, for example, items stored in a warehouse, are checked (S112). The amount of ordered items are then compared to the inventory in stock (S113). It is thus determined if the ordered quantity exceeds that in stock.

[084] If the ordered quantity exceeds the stock, a quantity of shipment-available products is determined according to each schedule of the corresponding products (S114). It is thus determined whether a portion of the shipment is possible. If a portion of the order can be shipped, a divisional shipment amounting to a predetermined quantity for each shipment-available date is possible. The divisional shipment is then reported to the

dealing company, and consent to send the divisional shipment is requested (S118). If consent is given, the process continues.

[085] Thus, order sheets for the divisional shipments for each available shipment dates, respectively, a divisional order processing server 61 preferably acquires information regarding the ordered items from a network built with the web server 20, the warehouse network 70 for managing the warehouse, and a company (or a department) manufacturing the corresponding product. Information about the available products in stock and stored in the respective warehouses, and information about the quantity of the products for each shipment-available date is also acquired.

[086] When the divisional shipment order sheet is generated, an order sheet for the total quantity of initially ordered products is confirmed as a single order sheet (S116). Additionally, the order sheets for the divisional shipments are confirmed randomly as divisional shipment order sheets (S117).

[087] The single order sheet is registered to the database server 10, and the randomly-confirmed divisional shipment order sheets are registered to the temporary order storage unit 11.

[088] The temporary order storage unit 11 is preferably a prescribed information storage area randomly allocated to the database server 10. The temporary order storage unit 11, however, is not limited to the database server 10, but may be replaced by a server configured for the registration of the order handled as the divisional order for each schedule.

[089] Thus, for any given dealing company, a product quantity for the divisional shipment is confirmed as one order regardless of the item or quantity of the product. The respective detailed shipment plan is classified to manage as temporary information so as to make the shipment by the respective temporary unit orders. Thus, information management is simplified by carrying out information management on one entire confirmation order.

[090] As the original shipment order sheet is registered in the database server 10, information of shipment completion for each shipment date verified by the shipment confirmation server 80 becomes the information for the respective divisional shipment order sheets registered in the temporary order storage unit 11. This prevents the chaos of a substantial shipment process.

[091] After the completion of each divisional shipment for each shipment date, the corresponding divisional shipment order sheet is deleted from the temporary order storage unit 11. The information of the corresponding divisional shipment order sheet is also transmitted to the database server 10 so as to be registered to the information storage area of the single order sheet in connection with the corresponding divisional shipment order sheet.

[092] After the completion of the entire divisional shipment, the shipment completion for the single order sheet is registered. The shipment progress is thus acknowledged.

[093] If, in step S118, the consent of the corresponding dealing company is not given for the divisional shipment, it is preferably confirmed again whether the delivery of



the corresponding quantity of the product is possible within the due data of the order for the company (or department) substantially manufacturing the corresponding product.

[094] If it is confirmed that the shipment is possible within the due date through the above process, the confirmation for the corresponding order is carried out. Otherwise, an extension of the due date of delivery is sought from the corresponding dealing company through a re-conference, or the order is cancelled (S119).

[095] If the stock on-hand exceeds the ordered quantity in step S113, the confirmation of the corresponding order is carried out normally, without the consent of the dealing company for the divisional shipment (S120).

[096] Meanwhile, when the confirmation of the order through the above-described steps is completed, the items associated with the confirmation are registered to the database server 10, and linked to the warehouse network 70. Shipment of the ordered items is thus performed in accordance with the corresponding order sheet.

[097] A shipment method for this is similar to that of the previously described divisional shipment. Namely, if the shipment completion for the respective shipment order sheets is confirmed through the shipment confirmation server 80 linked to the warehouse network 70, this confirmation information is acquired so as to be registered to the database server 10.

[098] In order to carry out shipment operations more precisely in the process of carrying out the above shipment, it is preferable that the errors be re-verified for the corresponding shipment product.

[099] Thus, referring to Figure 6, a shipment of the product for the confirmed order is first carried out (S121). Next, various information is gathered (S122). This information includes information regarding the corresponding order sheet acquired from the database server 10, and information regarding the product for shipment which is acquired by the shipment confirmation server 80 through the warehouse network 70. Next, it is determined whether at least a portion of the gathered information corresponds to the error item information previously established in the database server 10 (S123).

[0100] The error item information may include, for example, whether an item of the corresponding product is different the ordered item, whether the dealing company placing an order is registered on a black list, or whether a condition of redemption registered to a computer by a prior contract of the dealing company is different from an actual condition of redemption. The error item information may also include whether there were arrears of payments in previous transactions, whether shipment quantity and price are different from the previously set-up minimum option, whether a quantity of the product in stock varies, or whether some items of the order sheet have been changed.

[0101] If an error for the above items occurs in the above process, the shipment of the corresponding product is temporarily suspended until the corresponding error is cleared (S124). Additionally, the suspension may last until the particulars of the corresponding error are reported. If the error is subsequently remedied, or if no error has occurred, then the shipment of the corresponding product proceeds (S125).

[0102] Meanwhile, referring to Figure 7, if the order sheet is confirmed and the respective processes of the above described e-commerce system proceed, then the credit

information management server 91 readjusts the credit limit amount given to the corresponding dealing company to be reduced down to a purchase order amount of the product.

[0103] In this case, when the corresponding dealing company substantially pays the purchase expense of the purchased product within the credit limit amount either before or on the due date, then the previously readjusted credit limit is again readjusted up to the initial credit limit.

[0104] It is preferable that the variation in the credit limit be adjusted in real-time, so that the dealing companies can accurately ascertain their current credit situation.

[0105] Accordingly, the credit limit of the dealing company is preferably displayed on a prescribed area of the corresponding web page when the dealing company requests on-line ordering.

[0106] Hence, when a specific dealing company selects a purchase of a specific product and the order is confirmed, the credit information management server 91 balances the credit limit given to the corresponding dealing company in accordance with the purchase expense of the corresponding product. The credit information management server 91 preferably stores such changed information in the database server 10, and displays the changed information on the corresponding web page in real-time.

[0107] It is preferable that the credit limit amount for any given dealing company be established with the sufficient consent of the dealing company. Thus, it is preferable that a dealing company be able to request a modification of its credit limit. While the requested modification will usually be for additional credit, any modification is possible.

[0108] Thus, referring to Figure 7, a request to adjust the credit limit is received through a web site carrying out an e-commerce (S131).

[0109] When the request is received, the web server 20 checks a recent credit grade of the corresponding dealing company (S132). The credit grade is preferably stored in the database server 10. A provided credit limit amount corresponding to the corresponding credit grade is also checked (S133).

[0110] If the requested credit limit increase is larger than the existing credit limit by a prescribed amount, the request is preferably rejected, and the rejection is reported (S134).

[0111] If, however, the requested credit limit increase is approximately similar to or less than the checked credit limit amount, or within a prescribed allowable range, the request is granted and the allowance, as well as the revised credit limit is reported so as to be registered in the database server 10 (S136).

[0112] Of course, it is possible to reduce the credit limit amount given to each of the dealing companies. Once such a decrement is demanded, the allowance for the demand is reported without additional processes. The credit limit is also readjusted to the demanded credit limit.

[0113] The above-explained processes correspond to the preferred embodiment of the present invention. However, not all of the described elements are necessary for any given e-commerce system. Instead, each of the above-explained respective processes could be used alone, or in any combination.

[0114] For instance, a first system and method for enabling e-commerce considering locations of the respective dealing companies and a distribution network (channel), a second system and method for enabling a smooth and fast handling of various transaction expenses for an e-commerce process, and a third system and method for enabling a convenient process for placing and receiving an order between the respective dealing companies each have their own characteristics respectively, and are independently applicable to other e-commerce systems.

[0115] Various embodiments of systems and methods having the above-mentioned individual characteristics will be next described.

#### Second Embodiment

[0116] An e-commerce system and method according to a second embodiment of the present invention enables e-commerce by considering locations of the respective dealing companies and a distribution network.

[0117] Figure 8 illustrates an e-commerce system according to a second embodiment. Referring to Figure 8, an e-commerce system preferably includes a database server 110 configured to store information about respective dealing companies, information about respective sales products, and other information. It further includes a web server 120, coupled to the database server 110, which is configured to select products available for order for the respective dealing companies, and to display product items of the selected items on an interface screen.

[0118] An operating method of the above-constructed e-commerce system according to the second embodiment of the present invention is described as follows with reference to Figure 9.

[0119] First, a given dealing company logs-in to a web site for an e-commerce (S201). Upon the log-in, the web server 120 checks information of the corresponding dealing company using the log-in information (S202).

[0120] During such a process, the web server 120 determines what, if any, order restriction information is available for the corresponding dealing company (S203). This information is preferably retrieved from the database server 110.

[0121] The order restriction information is preferably information regarding a product for which sale is restricted by the corresponding dealing company among the products sold through the web site. The order restriction information is established by acquiring various information regarding, for example, location information of a corresponding dealing company and distribution channel information. This information is added to information asked of the respective dealing companies for services registration to the first corresponding web site. A registration process is then performed, indicating products to be as order-available or order-unavailable for the respective sales products and brand-new products on the basis of the acquired information.

[0122] Once the order restriction information for the corresponding dealing company is acquired through the above process, the web server 120 selects a list of the order-available products (S204). This list is selected based on the acquired order restriction information. The selection list is then displayed on the corresponding web page (S205).

Access is thus given only to the respective displayed products in accordance with the purchase.

[0123] Therefore, complaints between the respective dealing companies regarding the purchase of products between the respective dealing companies located in the same or very similar area(s) are preferably prevented.

### Third Embodiment

[0124] An e-commerce system and method according to a third embodiment of the present invention enables smooth and fast handling of various transaction expenses for entire e-commerce processes.

[0125] Referring to Figure 10, an e-commerce system preferably includes a database server 210 configured to store information about respective dealing companies, credit information of the respective dealing companies, and credit limit amount information of the respective dealing companies. The credit limit amount information is established by considering the credit information. The database server further stores information of respective sales products. The system also includes an information acquisition server 230 for acquiring a series of information, such as credit information for the respective dealing companies and the like, and a web server 220 linked to the database server 210 configured to operate a web site to receive orders for on-line sales of the respective products within a credit limit of each of the dealing companies. Next, a credit information management server 291 is provided for managing credit information of the respective dealing companies, and a grade allotment server 292 is provided for establishing credit limit amounts of the respective dealing companies.

[0126] The credit information management server 291 yields a purchase expense of a specific dealing company upon receiving an order from the web site, and determines whether to approve the corresponding order by comparing the purchase expense to the company's credit limit.

[0127] The grade allotment server 292 allots grades as references to give the credit limit amounts of the respective dealing companies. The grades and credit limits are determined on the basis of information that is acquired from the information acquisition server 230 relating to the respective dealing companies.

[0128] Figures 11-14 illustrate various aspects of an operating method of the above-constructed e-commerce system according to the third embodiment of the present invention.

[0129] Referring to Figure 11, the grade allotment server 292 first acquires the credit information of the respective dealing companies and checks the credit grades of the respective dealing companies on the basis of the acquired credit information (S301). This is preferably done on a continual basis. Next, the grade allotment server 292 allots the credit limit amounts according to the credit grades (S302). The allotted credit limit amounts are then registered to the database server 210 (S303). The registration is preferably done on a continual basis.

[0130] When a specific dealing company logs in the e-commerce web site, the web server 220 acquires the information about the credit limit of that dealing company from the information registered in the database server 210 using the log-in information of the dealing company (S304).



[0131] The information about the above-acquired credit limit amount is preferably continuously displayed on the corresponding web page while the corresponding dealing company is connected to the web site (S305). This provides the dealing company with convenient use of the site, in that errors due to exceeding the remaining credit limit can be prevented.

[0132] When a specific product is purchased by a dealing company in accordance with the above condition, the web server 20 preferably determines whether the corresponding dealing company is registered on the black list of bad trading companies (S306). The black list includes trading companies that fail to make substantial payments on loans within a stipulated time. Purchases by such companies are thus restricted.

[0133] When the corresponding dealing company is registered as a bad trading company on the black list, it is reported that the product purchase is rejected (S307). If, however, the corresponding dealing company is not registered as a bad trading company, the purchase expense of the corresponding product is yielded (S308). It is also determined whether a purchase order expense for the selected product exceeds the remaining credit of the corresponding dealing company using the credit information management server 291 (S309).

[0134] If the purchase order expense for the selected product exceeds the remaining credit limit of the company, a shortage status of the remaining credit limit of the company is reported, and a readjustment of the purchase order is requested (S310). If, however, the purchase order expense for the selected product does not exceed the remaining credit limit, the purchase order expense is deducted from the corresponding credit limit

(S311). Subsequently, the credit limit is readjusted as a remaining credit limit amount of the corresponding dealing company, and is registered to the database server 210 (S312). The adjusted credit limit is also displayed on the web page.

[0135] Next, when a dealing company makes a substantial payment for the purchased product within the credit limit amount on or before a stipulated time, the credit information management server 291 compares the company's basic credit limit with the remaining credit limit (S313), and thus calculates a payment-due amount.

[0136] Then, payment for the payment-due amount is preferably made (S314). In this case, when the corresponding dealing company settles accounts of the entire payment-due amount, the initially-given credit limit amount is restored by readjustment (S315). Additionally, information about the readjustment is registered to the database server. Alternatively, if the corresponding dealing company settles accounts of the payment-due amount in part, the settled amount is added to the remaining credit amount (S316). The remaining credit limit amount is thus adjusted, and information about this readjustment is registered to the database server (S317).

[0137] If a substantial settlement for the used credit limit amount is not made within the stipulated time, the credit grade and credit limit amount of the corresponding dealing company are readjusted to reflect this (S318). Additionally, a registration is preferably made such that no further purchases can be made, even if they are within the remaining credit limit amounts until the entire settlement is completed (S319).

[0138] Therefore, without settling the account for the product purchases through the web site, the respective companies may carry out the corresponding trades only with the previous credits so as realize fast performance of purchase.

#### Fourth Embodiment

[0139] An e-commerce system and method according to a fourth embodiment of the present invention enables a convenient process for placing and receiving an order between the respective dealing companies in an e-commerce process.

[0140] Referring to Figure 15, an e-commerce system preferably includes a database server 310 for storing information about respective dealing companies, information about respective sales products, information about respective order errors, information of respective confirmed orders, and the like. The system further includes a web server 320 for operating a web site to receive orders for on-line sales of the respective products from the respective dealing companies. Next, an error processing server 321 is provided for searching an error through order information of the respective products received through the web site operated by the web server 320, and taking action in accordance with the search result. The system further includes an order confirmation server 360 for confirming orders that have no error or for which an error has been cured, and a divisional order processing server 361 for processing each scheduled order for which a complete shipment is not possible. Thus, the divisional order processing server 361 coordinates shipments of partial quantities for every set-up date for the entire order quantity of the ordered product, and registers the items of the scheduled order having been handled to a temporary order storage unit 311.

[0141] Figures 16 and 17 illustrate a method of operating the above-constructed e-commerce system according to the fourth embodiment of the present invention.

[0142] First, information about the respective dealing companies, the respective sales products, the respective order errors, and the like are continuously searched, and the corresponding search results are registered to the database server (S401). The web server 310 then carries out log-in connections of the dealing companies, and confirms the dealing companies (S402).

[0143] During this process, when an order for a product purchase is received from a specific dealing company, the error processing server 321 searches whether any of the ordered items of the dealing company belong to a previously established error list in the database server 310 (S403).

[0144] The error list may include items for which the ordered product fails to be listed on sales items, dealing companies that have been placed on a black list as a bad trading company, orders for which an ordered product quantity and a price are different from the previously set-up minimum order quantity and price, or items for which a quantity of an available product in stock for delivery is less than the quantity of the ordered product, and the like.

[0145] When the error processing server 321 detects an error, the next operations are temporarily suspended (S404). Such errors are items reported (S405), and it is then continuously checked whether the error has been cured (S406).

[0146] Referring to Figure 17, if the error is generated due to a quantity of an available product in stock for delivery is less than the quantity of the ordered product, a divisional shipment is made, with the consent of the dealing company having placed the order (S411).

[0147] To perform the divisional shipment, the divisional order processing server 361 preferably determines a product quantity for each available shipment date (S409). It does this by acquiring information items ordered from a network built with the web server 320, the warehouse network 370 for managing a warehouse, and a company manufacturing the corresponding product. It further gathers information about the available products in stock and stored in the respective warehouses, and information about the quantity of the products for each shipment-available date. Using this information, a divisional shipment agreement may be reported (S410). If the agreement is accepted (S411), order sheets for the divisional shipments for the corresponding shipment-available dates are generated (S412).

[0148] When the error according to the order sheet from the dealing company is settled through a series of the above-explained processes, or when the error is settled automatically by the generation of the divisional shipment order sheets, the corresponding order sheet is confirmed (S407).

[0149] When the generation of the order sheet for the divisional shipment is completed, the order sheet for the total quantity of ordered products by the corresponding dealing company is confirmed as a single order sheet (S413). Additionally, the order sheets for the divisional shipments are confirmed randomly as divisional shipment order sheets (S414). The single order sheet is registered to the database server 310, and the randomly-

confirmed divisional shipment order sheets are registered to the temporary order storage unit 311.

[0150] If the corresponding dealing company for the divisional shipment does not agree to the divisional shipment in step S411, a request for an extension of the due date of delivery for the corresponding trade order is made, or the order is cancelled (S415).

[0151] The web server 320 operating the e-commerce thus automatically checks whether errors have occurred in the orders placed by the respective dealing companies, and also automatically cures the generated errors in connection with other components. Errors are thereby prevented and cured.

[0152] The e-commerce system and method according to the embodiments broadly described herein have many advantages. For example, the present invention preferably controls the orders so that the same product model is not for sale through the respective distribution channels of the dealing companies. Therefore, smooth on-line B-to-B e-commerce is facilitated without affecting the off-line trade relations between the respective dealing companies.

[0153] Additionally, because orders can be controlled by each product model, when a special situation occurs (for example, stock-in-short, out-of-production, etc.), a real time sales restriction for the special situation is established, and the corresponding items are acknowledged by the corresponding dealing company. Therefore, unnecessary purchase orders are prevented.

[0154] Next, the dealing company that places an order for a product on-line accomplishes the corresponding trade only with a previous credit, and without immediately settling accounts. The speed of purchasing a product is thereby accelerated.

[0155] Moreover, the credit limit amount is determined in accordance with the credit grade and size of each dealing company, thereby making the e-commerce more dynamic.

[0156] Additionally, the companies placing and receiving orders, respectively, do not have to check and confirm individual order items of the corresponding product and the order for the product. Thus, the management of the items for the product order and the management of the confirmation are automatically carried out, thereby improving an efficiency of order management.

[0157] Furthermore, the issuance and management of the divisional shipment orders are automatically carried out when available-products in stock are in short, thereby managing the shipment more easily and conveniently.

[0158] The foregoing embodiments and advantages are merely exemplary and are not to be construed as limiting the present invention. The present teaching can be readily applied to other types of apparatuses. The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art. In the claims, means-plus-function clauses are intended to cover the structures described herein as performing the recited function and not only structural equivalents but also equivalent structures.